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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,754	08/14/2002	Douglas D. Coolbaugh	BUR920020051	9661

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EXAMINER

LEE, HSIEN MING

ART UNIT PAPER NUMBER

2823

DATE MAILED: 12/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,754

Applicant(s)

COOLBAUGH ET AL.

Examiner

Hsien-Ming Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7 and 15 is/are rejected.
- 7) ☒ Claim(s) 8-12, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Remarks

1. Applicants' election to claims 7-12 and 15-17 is acknowledged.
2. Applicants are reminded to cancel non-elected claims 1-6, 13 and 14.

Claim Objections

3. Claims 7, 11, 12 and 15 are objected to because of the following informalities:

Claim 7 (line 9) and claim 15 (lines 13-14), changing "said plurality of diffusion regions" into -- said **first** plurality of diffusion regions -- is suggested.

Claim 11 and 12, the limitation is incomplete, i.e. "of approximately" ????

Claim 15 (line 8), changing "said well regions" into -- said **first and second** well regions --; and "said structure comprising masking structures" into -- said **plurality of conductive** structure comprising masking **said plurality of conductive** structures -- or into -- said **plurality of conductive** structure comprising **a plurality of** masking structures -- are suggested.

Claim 15, it appears an in-consistent term, i.e. "a plurality of **conductive** structure (line 7) versus "said plurality of **masking** structure" (lines 19-20).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation " forming a second plurality of diffusion regions of said first conductivity

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type in said first well regions abutting portions of said first plurality of diffusion regions that **do not abut** respective ones of said plurality of isolation regions”, as recited in claim 7 (lines 11-13 and claim 15 (lines 15-18), is not clear to the Examiner. (Emphasis added)

In light of Fig. 3, the Examiner believes that the second plurality of diffusion regions (24) of said first conductivity type in said first well regions (12v) abutting portions of said first plurality of diffusion regions (26) **do abut** respective ones of said plurality of isolation regions 14 since regions 24 are **adjacent** to regions 14.

Allowable Subject Matter

6. Claims 7 and 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

7. Claims 7, 11, 12 and 15 would be allowable if rewritten to overcome the objection as set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. Claims 8-10, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, Stolfa et al. to US 5,965,912, teaches a method of forming a varactor diode in a substrate, comprising:

- forming a well region 22 of a first conductivity type (i.e. N-type) in the substrate 12;
- forming a plurality of isolation regions 18 *on an epitaxial layer* 16;

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- forming a plurality of masking structures 42/52/53/82 having first and second sides formed on the substrate 12 between respective ones of said plurality of isolation regions 18;
- forming a first plurality of diffusion regions 71/73/75/77/79 of a *first* conductivity type, at least some of said plurality of diffusion regions 71 and 79 abutting respective ones of said plurality of isolation regions 18; and
- forming a second plurality of diffusion regions 31/33/35/37/39 of said first conductivity type (i.e. N-type) abutting portions of said first plurality of diffusion regions 73/75/77 that do not abut respective ones of said plurality of isolation regions 18, said second plurality of diffusion regions 31/33/35/37/39 extending below respective sides of respective ones of said plurality of masking structures 42/52/53/82, wherein respective ones of said second plurality of diffusion regions 31/33/35/37/39 do not contact one another.

In contrast, the prior art of record neither teaches nor suggests forming a plurality of isolation regions 18 **on upper portions of the well region and** forming a first plurality of diffusion regions of a **second** conductivity type.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-Ming Lee whose telephone number is 703-305-7341. The examiner can normally be reached on M-F (9:00 ~ 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7382.

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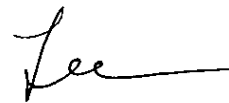
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hsien-Ming Lee
Examiner
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Dec. 24, 2003

A handwritten signature in black ink, appearing to read 'Lee', with a long horizontal stroke extending to the right.